WALL DEVICE FOR FITTINGS

TECHNICAL FIELD

The present invention relates to the devices used in the building manufacturing and restructuring. Particularly, the invention refers to a wall for fittings, fit for housing and supporting pipes, ducts, hydro thermo sanitary apparatuses, cables, wires, technological nets.

BACKGROUND ART

There are known devices, generally used in the building manufacturing and restructurings, constituted by structures or frameworks which are embedded and/or fixed to the walls in order to accommodate and support fittings, for instance pipes and sanitary equipments. Said frameworks allow to make easier and quicker to install and assembly hydro thermo sanitary elements, such as sinks, hygienic cups, reservoirs, bidet or white goods for instance boilers, washers, or ducts for the conditioning system or the passage of electric and signal cables.

Once completed the connection of the fittings, the frameworks are then embedded or covered by fixed casing panels or by a second layer of wall.

The main drawback of said known device consists in that they do not allow changes or variants of the structure or the framework especially after the installation.

Other drawback of the known devices consists in the elements having predefined and standard dimensions, which cannot be customized or modified, according to the elements to be fixed and the characteristics of the place to be built and/or restructured.

Further drawback consists in that said known devices cannot be easily inspected and, in case of maintenance interventions of the inner fittings therein, they require many masonry works firstly destructive and afterwards reconstructive.

Other drawback of the known devices consists in that they require heavy works during the installation and assemblage phase and a suitable prearrangement and preparation of the walls,

inside which said device must be inserted, in correspondence of appropriate embedding or seats.

DISCLOSURE OF THE INVENTION

The main object of the present invention is to propose a wall device for fixtures and fittings which is adjustable and customizable according to specific constructive requirements, and fit to be modified and also easily changed after the installation and the assemblage.

Other object is to propose a device, which can be fixed to an existing wall, requiring a minimum prearrangement of the preexisting walls, both in construction phase and in restructuring phase.

Further object is to propose a device fit to constitute a self-supporting independent wall.

Other object is that to propose a device having detachable covering panels, in order to allow an easy and quick installation and inspection of the inner pipes and ducts and the hydro thermo sanitary apparatuses supported thereby.

The above-mentioned objects are achieved according to the content of the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The characteristics of the invention are underlined in the following with particular reference to the attached drawings, in which:

- figure 1 shows a front view of the wall device for fittings, and the like, of the present invention;
- figure 2 shows a partial section view according to line II-II of figure 1;
- figure 3 shows a plant view of a plate mean of figure 2;
- figure 4 shows a section view according to line IV-IV of figure 2;
- figure 5 shows a partial section view according to line V-V of figure 1;
- figure 6 shows a back view of connection means of the figure 1 device;
- figure 7 shows a section partial view according to line VII-VII of figure 1;
- figure 8 shows a front view of a variant of the figure 1 device;

- figure 9 shows a partial section view according to line IX-IX of figure 8;
- figure 9A shows a partial section view of a variant of third fixing means of figure 9;
- figure 10 shows a partial section view according to line X-X of figure 8;
- figure 11 shows a partial section view of a variant of second fixing means of figure 5;
- figure 12 shows a partial section view of a variant of a first channel section and of second fixing means of the figure 5 device;
- figure 13 shows a view of fourth fixing means of the figure 1 device associated to second channel sections in which some parts have been removed for better underlining others;
- figure 14 shows a partial section view according to line XIV-XIV of figure 13;
- figure 15 shows an axonometric view of the fourth fixing means of figure 13;
- figures 16 and 17 show respectively a side view and partial section view according to line XVII-XVII of figure 16 of a variant of the first fixing means of the device of figure 1;
- figure 18 shows a partial cross section view of a further variant of the device of figure 1;
- figure 19 shows a partial section view of removable hanging means of the device;
- figure 20 shows an axonometric view of a further variant of the first fixing means of the figure 1 device;
- figure 21 shows a partial axonometric view of the variant of figure 20 connected to channel sections;
- figure 22 shows a variant of figure 20 fixing means;
- figure 23 shows a further variant of figure 20 fixing means;
- figure 24 shows a variant of a channel section of figure 2.

BEST MODE OF CARRYING OUT THE INVENTION

With reference to figures from 1 to 7, numeral 1 indicates the wall device for fittings, for instance ducts, wirings, sinks, hygienic vases, heaters, white goods and the like, known and not shown, substantially constituted by horizontal and vertical uprights 2, mutually connected through adjustable first fixing means 10. The device includes connection means 20 fit for connecting the fittings to the uprights 2.

Each vertical upright 2 is constituted by a first channel section 5 or by a second channel section 6, whose each one including, starting from a respective bottom side 50, two respective opposed side parts 51 and almost orthogonal to the bottom side 50 and two first portions 52 parallel to the bottom side 50.

The bottom side 50, the side parts 51 and the first portions 52 define respectively a cavity 55 and a longitudinal opening 8 fit for housing the first fixing means 10 and for the connection means 20.

At least a first portion 52 of each first channel section 5 has also a second portion 53 orthogonal to the first portion 52 and facing outward the respective cavity 55. The second portions 53 of the first channel section 5 are carried out in a single body with the latter, by appropriately folding said channel section.

In the preferred embodiment the wall device 1 object of the present invention includes two vertical uprights 2, constituted by first channel sections 5, and two horizontal uprights 2, each one consisting of the second channel section 6.

The device further has a middle horizontal upright 2 carried out by a second channel section 6 and fit for supporting, through the connection means 20, fittings, ducts, hydro thermo sanitary elements.

It is provided that each of the section channel 5, 6 has in correspondence of the bottom side 50 one or more windows 57, fit to allow and make easier the introduction and the passage inside and through the device of pipes, ducts, wirings.

The connection between a second channel section 6 and a first channel section 5 or a second channel section 6 of the uprights 2 is carried out by the first fixing means 10, each one constituted by a plate mean 15, having a nearly rectangular shape, which can be insert inside the cavity 55 of the second channel section 6 and removably connected to a first "U" shaped bracket mean 16, which can be fit inside the cavity 55 of the channel section 5, 6. The plate mean 15 and the bracket mean 16 clamp, by clamping means 7, for instance screws or bolts, the first portions 52 of the channel section 6, blocking the second channel section 6 to the first fixing means 10. A sliding fixed joint between the fixing means 10 and channel section 5 is carried out by inserting the ends of the bracket mean 16 into the cavity 55 of the channel section 5.

The connection between a first channel section 5 and a second channel section 6 can be carried out through second fixing means 11, constituted by the plate mean 15 and by an abutment mean

17, removably connected, through clamping means 7, in such way to clamp the second portion 53 of the first channel section 5 to the first portions 52 of a second channel section 6. In this case, tightening the clamping means 7, the two channel sections 5, 6 are reciprocally blocked.

The second fixing means 11, as shown in figure 11, can include spacer means 23 which can be interposed between the clamping means 7 and the related abutment mean 17 and allow to distribute more uniformly the clamping pressure on the portions of the channel section to block.

The plate mean 15 has two flat faces or chamfers 46, for instance flat and parallel, carried out in correspondence of two opposed vertexes of the same plate, to allow the rotation of the latter in operational position, after the insertion in the cavity 55 through the longitudinal slot 8.

There are provided third fixing means 12, shown in figure 9, to allow connecting a first channel section 5 to a first channel section 5 or to a second channel section 6. The fixing means 12 are constituted by a second bracket mean 18, "U" shaped and inserted inside the cavity 55 of the first channel section 5; the second bracket mean 18 is removably connected, through the clamping means 7, to inserting means 19 fit inside the cavity 55 of the remaining channel section 5, 6.

In alternative, as shown in figure 9A, the third fixing means 12 can be constituted by a plate mean 15, inserted inside the cavity 55 of the first channel section 5 and connected, through clamping means 7, to inserting means 19, consisting of a channel section portion with hollow rectangular section, inserted inside the cavity 55 of the remaining channel section 5, 6.

The end of the second bracket mean 18 and the inserting means 19 clamp the second portions 53 of the channel section 5, blocking the latter to the first fixing means 10. The insertion of the inserting means 19 in the cavity 55 of the channel section 5, 6 carries out a sliding fixes joint between the fixing means 10 and said channel section.

Referring to figures from 20 to 22, the device 1 includes sixth fixing means 13, consisting of a "C" shaped element, which can be inserted inside the first channel section 5 and is provided with at least a couple of lateral slots 113, allowing the insertion, by rotations, of the first portions 52 of a second channel section 6.

The end, close to lateral slots 113, of central wall of sixth fixing means 13 has a first recess 114

fit for avoiding interferences with eventual nuts or screw head for fixing the second channel section 6 to the ceiling or to the floor.

The inner end of the first recess 114 has a tab 116 protruding outwards to form a stop for the first channel section 5; alternatively the inner ends of lateral slots 113 can be provided with corresponding tabs 115, protruding outwards to form a stop.

The end of central wall of sixth fixing means 13, opposed to lateral slots 113, has a second recess 117, fit for making easier the assemblage operations.

The fixing means 13 of figure 23, consists of a parallelepiped shaped element made of solid plastic and having one free end provided with a housing mean 118 consisting of a slot for a protrusion of a related coupling mean 119 which can be inserted inside the first channel section 5. Housing mean 118 and coupling mean 119 are provided with respective holes 120 for a fixing pin 121 or screw.

The channel section 5 of figure 24 has, in correspondence of the window 57, a removable portion 61 fit for the insertion of elements, like pipes or tubes, inside the window 57 in an installation condition of the channel section 5, 6. The removable portion 61 is fixed to the channel section 5, 6 by means of screw, nuts and washer.

The wall device 1 can be embedded into a suitable opening or cavity in a wall 60, or can be simply leaned against the latter.

The fixing of the device to the wall 60 is carried out through a plurality of fasten means 30, whose each one is constituted by a plate mean 15, inserted in the cavity 55 of an second channel section 6 and removably connected to a "L" shaped bracket mean 31, through clamping means 7. The bracket mean 31 is fixed to the wall 60 by means of screws or wedges, of known type, and it has a slot 32 for allowing the regulation of the clamping means 7 position and, consequently, the distance of the device 1 from the wall 60. Such characteristic is particularly advantageous in the case in which said wall have noticeable shape irregularities.

Each connection mean 20 includes a support 21, which is detachably connected through clamping means 7, to a plate mean 15 inserted in the cavity 55 of a second channel section 6 of a middle horizontal upright 2. In order to avoid the rotation of the support 21 with respect to the

upright 2, it is provided an anti-rotation bracket 22, U shaped and connected to the support 21, whose ends are inserted in the longitudinal slot 8 of the related channel section 6, for avoiding the rotation of the connection mean 20.

The device further includes fourth fixing means 25, shown in figures 13-15, fit for adjustably connecting second channel sections 6 to first channel section 5 or second channel section 6. Each fourth fixing mean 25 includes a first portion 26 characterized by a transversal seat 28, fit for accommodating a first portion 52 of a channel section 6 and a protrusion 27, almost orthogonal to said transversal seat 28 and which can be inserted inside the cavity 55 of a corresponding channel section 5, 6. Threaded means block the fourth fixing mean 25 to the portion 52 of the channel section 6, once defined the related position of the two channel section.

There are provided covering panels 4, for instance made of Fermacell or vibrated cement or asbestos gypsum, fixed to the uprights 2, and particularly positioned against the portions 52, 53 of the first 5 and second 6 channel sections, to which they are constrained by threaded connections of known type.

Sealing means can be interposed between the first 5 and second 6 channel sections and the panels 4.

The figures from 8 to 10 show a variant of the wall device 1 characterized by two horizontal uprights, upper and middle, constituted by first channel section 5, and by a vertical middle upright consisting of a second channel section 6. The vertical uprights are carried out by two first channel section 5 sideways coupled with the interposition of a abutment spacer 29 and connected to connection means 24, consisting for instance of a U shaped bracket, containing the edges 52, 53 and is blocked in position by clamping means, which sideways contact said first portions 52.

The connection between the channel section 6 of the middle vertical upright and the channel sections 5 of the two horizontal uprights is carried out by clamping the portions 52, 53 between an abutment plate 33 inserted inside the cavity 55 of the channel section 6 and the abutment mean 17.

In this case the wall device 1 is inserted into a passing through or blind space carried out in the wall 60, to which it is sideways clamped by lock means 59, of known type, screwed or welded

or glued to channel sections 5, 6 of the device 1.

There are further provided L shaped bracket 34 of known type, fit for mutually irremovably connecting the vertical and horizontal uprights 2 in such a way to give to the device 1 a rigid and fixed structure.

Another variant of the device 1, shown in figure 12, provides the use of a first channel section 5 in which the second portion 53 consists in a shaped channel section 66, fixed to an inner protrusion 56 of a corresponding first portion 52.

A variant of the first fixing means 10, shown in the figures 16 and 17, provides that the first bracket mean 16 is constituted by two separate portions, reciprocally rotatably coupled and connected respectively to the plate mean 15 and to a channel section 5, 6. The two portions can reciprocally rotate around an axis nearly orthogonal to the plane defined by the device 1, and they allow in this way to adjust the inclination of an horizontal upright 2 with respect to the vertical uprights, for instance when the device 1 must be inserted in an room having sloping ceiling, such as an attic, a garret, a closet.

Fifth fixing means 40 connect the first channel section 5 to another first channel section 5 or second channel section 6. The fifth fixing means 40 are substantially constituted by a nearly U shaped connection element 41, whose portion is inserted inside the cavity of a channel section 5, 6, while the remaining portion mates the bottom side 50 of the channel section 5 and is blocked to the latter. Particularly, the element 41 is blocked to the inner protrusion 56 of the portion 52 of the channel section 5 by means of an insert 42, adjacent to the portion 52, to which said insert 42 is removably connected d by a screw. It is further provided a spacer element 43 interposed between the screw head and the connection element 41 and between the latter and the insert 42, guarantying a more stable clamping of the fixing means 40.

The figure 18 shows a further variant of the wall device 1 including spacing means 35 of uprights 2, side by side positioned and fit to form a space 36 delimited by said horizontal and vertical uprights 2. The space 36 is used for housing fittings, wirings, pipes or carries out an interspace for the ventilation, usable for the summer and winter conditioning of the room in which the device is inserted.

The covering panels 4 are screwed to the uprights 2 or, referring to figure 19, the covering

panels 4 are removably fixed to horizontal uprights 2 by means of a plurality of hanging means 9. Each hanging means includes a "S" shaped section element, fixed to the covering panel 4 by means of screws to form a side for an horizontal uprights 2, consisting of a second channel section 6.

There are provided in this variant insulation panels 37, whose ends are inserted and fixed, for instance by glueing or by screws, in the longitudinal openings 8 of the channel section 5, 6 which constitute the uprights 2. Covering panels 4 are provided on the external sides of the device 1, while further insulation panels, for instance made of polystyrene, or separation panels 38, made of cement material or the like, can be inserted inside the interspace 35.

The main advantage of the present invention is to provide a wall device for fixtures and fittings, which is adjustable and customizable according to specific constructive requirements, and fit to be modified and also easily changed after the installation and the assemblage.

Other advantage is to provide a device, which can be fixed to an existing wall, requiring a minimum prearrangement of the preexisting walls, both in construction phase and in restructuring phase.

Further advantage is to provide a device fit to constitute a self-supporting independent wall.

Other advantage is to provide a device having detachable covering panels, in order to allow an easy and quick installation and inspection of the inner pipes and ducts and the hydro thermo sanitary apparatuses supported thereby.